PARI

WAGER. (analysis of Games.) when two players A, B, play the one against the other, & that the expectation of player A is to that of player B in ratio of \( m \) to \( n \), the wager for player A is also to the wager for player B in ratio of \( m \) to \( n \); or the number \( m \) is nothing other than the number of cases which could make player A win, & \( n \) is the number of the cases which could make B win. For example, if a player A wishes to produce 12 with two dice, one has \( m = 1 \), & \( n = 35 \), because there is only one case which could bring 12, & 35 which will bring another thing. See Dés. Therefore in order to wager even, that is to say with an equal advantage, following the ordinary rules of the games, it is necessary that the stake of player B be to that of player A as 35 is to 1.

Similarly, if one wagers to produce in six throws a doublet with two dice, it is clear that the number of the possible throws is \( 36^6 \), & that the number of throws where there is no doublet \( 30^6 \); whence it follows that the wager must be as \( 36^6 - 30^6 \), that is to say, as \( 6^6 - 5^6 \) is to \( 6^6 \).

Moreover, these rules must be modified in certain cases, where the probability of winning is very small, & that of losing very great. On which see the article Jeu. (M. d’Alembert)